Problem I: Dinner with the Queens

After a long journey, Alice reached the end of the large field she had been exploring, and was rewarded by becoming a Queen. Soon afterwards, she was taken to a dinner in her honour, escorted by the Red and White Queens.

Alice took her place at the head of the table, with the Red Queen on one side, and the White Queen on the other. The waiters set a leg of mutton before Alice, who looked at it rather anxiously, as she had never had to carve a joint before.

"You look a little shy: let me introduce you to that leg of mutton," said the Red Queen. "Alice–Mutton: Mutton–Alice." The leg of mutton got up in the dish and made a little bow to Alice; and Alice returned the bow, not knowing whether to be frightened or amused.

Figure 1: The leg of mutton bowing

"May I give you a slice?" she said, taking up the knife and fork, and looking from one Queen to the other. "Certainly not," the Red Queen said, very decidedly: "it isn't etiquette to cut any one you've been introduced to."

The leg of mutton saw this as his chance to be saved from being eaten; all he had to do was introduce himself to every guest on the table. But he planned to do it in a peculiar way. As we know, he introduced himself to Alice first, who was sitting in the place of honour. Let's say that there were **N** people sitting at the table, identified with the numbers $1, 2, \ldots, N$. Alice's place is number 1, with the Red Queen on her right occupying place 2, and the White Queen on her left on place N.

The procedure used by the leg of mutton to choose the order in which he makes his introductions is as follows: Alice was the first choice, now he moves left (relative to Alice, sitting at the table) and counts two people and that second person is chosen. Then he moves to the right (again, relative to the guests) and counts three people, skipping positions already picked. That third person is chosen. He continues in this manner, changing directions and increasing the count by one at each turn, until all guests have been chosen.

For example, let's say that there are 5 people sitting at the table. The order in which the leg of mutton would do his introductions in this case would be: 1, 4, 3, 5 and finally 2.

Given the initial number of guests sitting at the table, who would be the last person to be introduced to the leg of mutton?

Input

Input starts with a positive integer **T**, that denotes the number of test cases ($T \leq 200$).

Each test case is given in a single line that contains an integer **N**, representing the number of people at the dinner table.

$3 \leq N \leq 50000$

Output

For each test case, print the case number, followed by the number of the person who is introduced to the leg of mutton last.

Sample Input

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2
5
42
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Output for Sample Input

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Case 1: 2
Case 2: 40
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